



U.S. Department  
Of Transportation

**Federal Highway  
Administration**

# Memorandum

6300 Georgetown Pike  
McLean, Virginia 22101

Subject: **ACTION:** LTPP Directive D-32  
Transverse Profile Measurement with the Face Dipstick® -  
Profile Run Closure and Offset Procedures

Date: June 26, 2003

From: Jack Springer   
Long Term Pavement Performance Team

Reply to  
Attn of: HRDI-13

To: Dr. Frank Meyer, PM - LTPP North Atlantic Regional Contract  
Dr. Frank Meyer, PM - LTPP North Central Regional Contract  
Mr. Mark Gardner, PM - LTPP Southern Regional Contract  
Mr. Kevin Senn, PM - LTPP Western Regional Contract  
Mr. John Hunt, Chief, Engineering Services - CGH Pavement Engineering, Inc.

Attached is the Long Term Pavement Performance (LTPP) Program directive D-32: Transverse Profile Measurement with the Face Dipstick® - Profile Run Closure and Offset Procedures. The following is an expansion of the procedures outlined in paragraph 3.3.4 and 3.3.5.5 of Chapter 3, LTPP Profiler Manual, Version 4.0, September 2002.

Please ensure that all personnel involved with the distress data collection and processing are aware of this new directive.

Should you have any questions or would like to discuss this directive, please do not hesitate to contact me at 202-493-3144.

Attachments

# LONG TERM PAVEMENT PERFORMANCE PROGRAM DIRECTIVE



*For the Technical Direction of the LTPP Program*



Program Area: Monitoring

Directive Number: D-32

Date: June 25, 2003

Supersedes: Paragraphs 3.3.4 and  
3.3.5.5 of LTPP  
Profiler Manual, V.  
4.0, September 2002

Subject: Transverse Profile Measurement with the Face Dipstick® – Profile Run  
Closure and Offset Procedures

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The following is an expansion of the procedures outlined in paragraph 3.3.4 and 3.3.5.5 of Chapter 3, LTPP Profiler Manual, Version 4.0, September 2002.

## **3.3.4 Site Inspection and Layout - Transverse Profile Measurements**

Pavement must be clear of ice, snow, and puddles of water before profile measurements can be taken with the Dipstick®, as such conditions can affect profile measurements. Pools of water can possibly damage electronics in the Dipstick® and must be avoided either through adjusting schedule of profiling trips, or by delaying actual measurements until acceptable conditions exist. Layout and mark straight lines for transverse profile measurements. Lines shall be perpendicular to edge of pavement and located at 15.24 m intervals, starting at station 0 and ending at station 152.4 m (or end of section if length of test sections is greater than 152.4 m). For each test section (GPS or SPS), eleven transverse lines will be present (or more if length of test sections is greater than 152.4 m). The location of these lines should be offset to avoid pavement markings and other anomalies such as patches, potholes and areas that have high severity cracking with missing material. This offset must not exceed 1 meter either way. If the anomalies cannot be avoided, the transverse profile is taken at the best location within the allowable offsets. The need for and magnitude of such adjustments is to be recorded on appropriate data sheets. Transverse profile measurements shall be performed when manual surveys are conducted on AC surfaced pavements including rigid pavements with AC overlays. Transverse profile measurements are not required for rigid pavements.

## **3.3.5.5 Closure Error Computation**

The total accumulated error in a transverse profile is established by a closed loop survey. The forward and return run along a transverse line is utilized to compute this error. At each station, sum the readings for the forward and return runs separately, and record the values in 'Sum' column of Form DS-8. Then at each station, add the values in 'Sum' column for the forward

and return run, and record the result in the 'Closure' column. At each station, for each Dipstick® reading, add the reading for the forward and return run, and record the value in the field 'Difference'.

To compute the allowable closure error for a transverse profile run, multiply total number of Dipstick® readings (sum of number of readings for forward and return run) by 0.076 mm. The allowable closure error for typical lane widths that are encountered are given in table 3.1.

Table 3.1. Allowable closure errors for transverse Dipstick® measurements

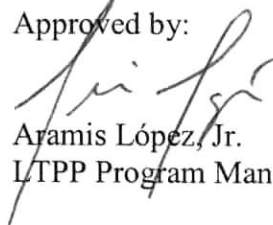
Lane Width (m)	Total Number of Dipstick® Readings	Allowable Closure Error (mm)
3.05	20	+/-1.5
3.35	22	+/-1.7
3.66	24	+/-1.8
3.96	26	+/-2.0

If the closure error for a transverse profile is outside the allowable range, the measurement of the transverse profile shall be repeated once. If the closure error for the repeat run is also outside the allowable range, then the transverse profile line shall be offset no more than 1 meter and the run repeated once. The value in the 'Difference' field at a specific position gives the difference in readings between the forward and return runs at that position. This information can be used by the operator to identify locations where problem readings may be occurring. If after the offset, the closure error for a transverse profile run is still outside the allowable range, and the Dipstick® is able to pass post data collection checks, enter a comment on why closure error is outside the allowable value (e.g., ROUGH SURFACE TEXTURE, i.e., CHIP SEALS, MADE CLOSURE DIFFICULT). The data from the third run will be submitted to FHWA, with a copy to the TSSC. A decision on including that data in the database will be made on a case-by-case basis.

Questions concerning this directive should be addressed to the FHWA LTPP Team staff member responsible for distress operations, with a copy to the LTPP Technical Support Services Contractor.

Prepared by: Lendis Team

Approved by:

  
Aramis López, Jr.  
LTPP Program Manager